REMARKS

Reconsideration of the above-identified patent application, as amended, is respectfully requested.

Claims 2-8 are pending. Of these, only claim 7 is independent.

In the Office Action dated December 28, 2004, the Examiner rejected claims 2-8 under 35 U.S.C. 102(b) as being clearly anticipated by WO 96/33775 ("WO '775"). According to the Examiner, WO '775 discloses a device for extinguishing fires using a bursting disk as claimed in the instant invention. However, for the reasons set forth below, it is believed that the present claims are not anticipated nor rendered unpatentable by WO '775.

The claimed invention is for a device for extinguishing fires in structures such as buildings or ships, which device comprises extinguishing nozzles arranged in areas of the structure.

Devices for extinguishing fire are divided into two categories: unfilled systems and filled systems. For unfilled systems, the supply line is empty in the state of rest. There is no fluid in the supply line. Fluid is only filled into the supply line in the event of a fire. The extinguishing fluid is supplied from a fluid supply. For filled systems, the supply line is already filled with extinguishing fluid even in the rest state. For filled systems, the time required for providing the extinguishing fluid to the nozzles is negligible in comparison to the time required for providing extinguishing fluid to the nozzles in unfilled systems.

The inventive system claimed herein is designed for a filled system, where the supply lines are already filled with extinguishing fluid in the rest state as claim 7

specifies that the "extinguishing fluid fills the supply line . . . when the device for extinguishing fires is in a quiescent state." The advantage of the filled system is that in the event of a fire, the extinguishing fluid is available at the spray nozzles immediately. Further, the supply lines can be used as storage for the extinguishing fluid. Also, pumps and pressurized containers can be less high-performance and less elaborate in comparison to unfilled system (See p. 2, paras. 2-3), can be used.

However, in filled systems heretofore, there is the drawback that the spray nozzles are at all times in contact with the pressurized extinguishing fluid. The valves, seals, and nozzles need to be prevented from leaking. The expenditure for manufacture, installation, and maintenance of the valve devices used with the filled systems is high. Further, the valves need to be actuated in case of fire. In addition, the valves may fail in the event of a fire. Damages to the valves can cause actuation of the device even in case no fire is detected.

Therefore, it is necessary for the spray head and the extinguishing nozzles to be sealed against the extinguishing fluid very well. Nozzles, valves and gaskets should only be in contact with the extinguishing fluid in case of a fire. For example, many extinguishing fluids have additives which are corrosive and can cause damages to the nozzles, valves and gaskets. This needs to be prevented.

To prevent damage to the spray head, according to the present invention a bursting disk is provided directly within the connection end of the supply line. Arranging the bursting disk within the connection end of the supply line enables the supply line to be filled but the device itself to be in an unfilled state in the rest state. The spray head is sealed from contact with the extinguishing fluid entirely. Nozzles, valves and gaskets

also do not come into contact with the extinguishing fluid. On the other hand, once burst, the bursting disk provides an immediate flow of extinguishing fluid unimpeded into the extinguishing nozzles in case of a fire (p. 3, paras. 3, 4). In the device of the present invention, the inlet aperture of the inflow borehole is closed off by means of the bursting disk. Thus, the busting disk is located within the connection end of each individual supply line, as claim 7 specifies that "the bursting disk is arranged within the connection end of the supply line."

A fire monitor monitors for a fire. In the event of a fire breaking out, the fire monitor issues a fire alarm to a control device. This then causes the extinguishing fluid supply system to impose extinguishing fluid, kept under pressure, on the supply lines. As soon as the pressure of the extinguishing fluid present at the bursting disk rises above the bursting pressure of the bursting disk, the bursting disk bursts. After bursting of the bursting disk, extinguishing fluid flows unimpeded into the extinguishing nozzles. A mist of extinguishing fluid allows fighting fire effectively.

By providing the bursting disk within the connection end of the supply line, the invention prevents the spray head from being damaged by extinguishing fluid in the rest state, but provides for all advantages of a filled system.

The cited reference WO '775 does not show all features of the invention nor does it render the invention obvious.

WO '775 describes a filled system, where the supply line is filled with extinguishing fluid in the rest state. (See p. 9, last section). The extinguishing fluid is in contact with the bursting disk 23 via connection end 21, borehole 25, and space 24. Via connection channel 20, which ends in space 19, the extinguishing fluid is also in contact

with the retainers 3 beyond the bursting disk 23. The space 19 is sealed from retainer 3 through annular seal 22. The blind borehole 15 and the trough-borehole 16 provide a connection between space 24 and retainer 3, which is sealed by bursting disk 23.

In case of a fire, the piston-shaped glass vial 13 bursts. Subsequently, as a result of the spring force of the spring 26, the piston 6 is moved in the direction of the front 7 of the extinguishing nozzle head 1. As a result of this movement, the first connection channel 20 is connected to the retainer 3 by way of the space 19 and the annular chamber 17, so that extinguishing fluid emanates from the fire extinguishing nozzles screwed into the retainers 3. The drop in pressure in the supply line is detected by a monitoring and control system. Subsequently, a pressure generator increases the pressure of the extinguishing fluid. As soon as the pressure within the supply line reaches a defined limit value, the bursting disk 23 bursts on those fire extinguishing nozzles heads, where the glass vials had not been destroyed. Subsequently, extinguishing fluid reaches the retainer 3 by way of the second connection channel 25, the blind borehole 15, the trough borehole 16, and the annular chamber 17.

With the arrangement according to WO '775, the vial 13, which is in the immediate vicinity of the fire, is destroyed. By that, extinguishing fluid is provided to the nozzles through connection channel 20, space 19, and annular chamber 17. Only after providing the extinguishing fluid to these nozzles, the pressure is increased and causes the bursting disk 23 of the extinguishing nozzles-heads, which is not in the close proximity to the fire, to burst. The retainer 3 is provided in these cases through blind borehole 15, trough borehole 16, and annular space 17 with extinguishing fluid. The same applies to the extinguishing nozzles-heads according to a second embodiment.

During destruction of the glass vial 66, the piston 55 is moved and the retainer 23 is provided with extinguishing fluid via the first connection channel 57 and clear space 56. The drop in pressure causes a pressure increase signal. This causes an increase in pressure, which increases the pressure on bursting disk 74 causing it to burst. This causes spraying of extinguishing fluid even in areas not in close proximity to the fire.

The devices according to WO '775 provide a two step method. First, in close proximity to the fire, the vials 13 and 66 burst causing extinguishing fluid to flows via spaces 59, 56 to retainers 3, 53. This causes a pressure drop and subsequently a pressure increase due to pump action. After the increase in pressure, bursting disks 23 and 74 burst. However, with this system, where extinguishing fluid is also in rest state in connection with the retainers 3 and 53, these need to be sealed from the supply line 21, 58. Sealing is provided by annular seals 22, 63, 62. These seal rings are in permanent contact with high pressure extinguishing fluid.

There is a problem that lies with leakages of the seal rings. As the disclosed system of WO '775 detects a fall in pressure of the extinguishing fluid in the supply lines and causes a pressure increase after detection of a fall in pressure, already small leakages may cause the pressure sensor to detect a decrease in pressure and to activate the pump. This causes the bursting disks to burst. The seal rings have to be absolutely leak proof. However, after a while the seal rings, which are in contact with the extinguishing fluid under pressure, may become porous. Extinguishing fluid may leak through retainers 3 and 53. This causes a fall in pressure. The fall in pressure causes the pump to be activated and to increase the pressure in the supply lines. This again causes the bursting disks 23 and 74 to burst. This can lead to huge damages even though no fire is present.

Therefore, the disclosed system of WO '775 needs maintenance. The seal rings need to be controlled and exchanged. Exchanging the seal rings, however, requires removing the piston 18 and 55. Removing the pistons causes extinguishing fluid to leak from the supply line. Therefore, deventilation of the supply lines is necessary after exchange of the seal rings. This increases maintenance costs.

In contrast to the system disclosed in WO '775, the invention provides a system, where the bursting disk is provided within the connection end of the supply line. The bursting disk prevents extinguishing fluid from flowing into the extinguishing-nozzle head even in the rest state. There are no elements of the extinguishing nozzle-head in direct contact with the extinguishing fluid, but the bursting disk. Therefore, document WO '775 does not show or disclose all features of the invention.

Different from WO '775, the claimed invention requires the bursting disk to be within connection end of the supply line, preventing extinguishing fluid to flow into the extinguishing nozzle-head in the rest state. A bursting disk according to the invention provides complete sealing of the extinguishing nozzle-head from the supply line. Seal rings are not necessary. Leakages within the extinguishing nozzle-heads, in particular between the nozzles and the retainers, do not cause any leakage of the extinguishing fluid from the system. A bursting disk provides the sealing. Maintenance of the extinguishing nozzle-heads, for instance, exchanging nozzles, can be carried out without leakage of extinguishing fluid from the system. The skilled artisan is taught in WO '775 a different system. Therefore, the device of claim 7 is not obvious from WO '775.

For these reasons, it is believed that claims 7, and the claims which depend from it, are neither anticipated nor rendered obvious by WO '775.

In view of the foregoing, it is believed that the present application is in condition for allowance and a favorable action on the merits is respectfully requested.

Respectfully submitted,

PROSKAUER ROSE LLP
Attorneys for the Applicant

By _____
Charles Guttman
Reg. No. 29,161

March 28, 2005

PROSKAUER ROSE LLP
Patent Department
1585 Broadway
New York, NY 10036-8299
Tel: (212) 969-3000